

METHOD, SYSTEM, AND PRODUCT FOR MARKING PARTICULAR TYPES OF COMMUNICATIONS

BACKGROUND OF THE INVENTION

1. Technical Field:

5 The present invention relates generally to an improved data processing system, and more particularly to a method, system, and product for marking particular types of communications. Still further, the present invention relates to a data processing system, method, and product for marking a communication that may be unwanted before forwarding the communication to its intended recipient.

10 2. Description of Related Art:

The Internet, also referred to as an "internetwork", is a set of computer networks, possibly dissimilar, joined together by means of gateways that handle data transfer and the conversion of messages from the sending network to the protocols used by the receiving network (with packets if necessary). When capitalized, the term "Internet" 15 refers to the collection of networks and gateways that use the TCP/IP suite of protocols. The Internet has become a cultural fixture as a source of both information and entertainment. Many businesses are creating Internet sites as an integral part of their marketing efforts, informing consumers of the products or services offered by the business or providing other information seeking to engender brand loyalty. Many federal, 20 state, and local government agencies are also employing Internet sites for informational purposes, particularly agencies, such as the Internal Revenue Service and secretaries of state, which must interact with virtually all segments of society. Providing informational guides and/or searchable databases of online public records may reduce operating costs.

With the advent of the Internet, the number of electronic communications has increased sharply. It is very easy using the Internet to communicate with another user via e-mail. This ease-of-use has led to a situation where users are now bombarded with unwanted communications, such as unsolicited e-mails. These unsolicited e-mails are often referred to as "SPAM".

Therefore, it would be advantageous to have a method, system, and product for marking a particular type of communication before forwarding the communication to its intended recipient.

SUMMARY OF THE INVENTION

A data processing system, method, and product are disclosed for marking particular types of communications. A database is established that includes multiple different distinguishing identifiers. Each identifier identifies a particular type of communication. A communication is received. A determination is made as to whether the communication includes one of the distinguishing identifiers. Communications that include one of the identifiers are marked.

The above as well as additional objectives, features, and advantages of the present invention will become apparent in the following detailed written description.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 is a pictorial representation of a distributed data processing system in which the present invention may be implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance with the present invention;

Figure 3 is a block diagram of a data processing system that may be implemented as a client in accordance with the present invention;

Figure 4 depicts a high level flow chart that illustrates storing distinguishing identifiers in a database in accordance with the present invention;

Figure 5 illustrates a high level flow chart that depicts marking particular types of communications in accordance with the present invention; and

Figure 6 depicts a high level flow chart that illustrates a recipient receiving marked communications in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention is preferably realized using a well-known computing platform, such as an IBM RS/6000 workstation running the IBM AIX operating system. However, it may be realized in other popular computer system platforms, such as an IBM personal
 5 computer running the Microsoft Windows operating system or a Sun Microsystems workstation running operating systems such as UNIX or LINUX, without departing from the spirit and scope of the invention.

The present invention is a data processing system, method, and product for marking particular types of communications. For example, unwanted communications or
 10 personal communications may be marked. Marking may be accomplished in many fashions, for example: adding text to the subject line (e.g. "SPAM"); sending a message or note to an e-mail application identifying a particular communication as possibly unwanted; embedding the suspected unwanted communication in another note, perhaps with a new subject line; changing attributes of the communication text content or subject
 15 line (e.g. Using a different font, using a bold or italicized font, using a larger font, using a blink rate); changing the color of the subject line (e.g. Potential unwanted communications could be displayed in red); changing non-textual attributes of the communications (e.g. Changing the pitch, timbre, play rate (speed), or volume of an audio message, or changing the colors, contrast, play rate (speed), or intensity of a visual
 20 communication); adding an icon or symbol next to the suspected unwanted communication (e.g. An image of a 'thumbs down', or a percent symbol is placed next to the listing for the communication in an e-mail inbox); positional marking (e.g. Communication are sorted so that unwanted communications are at the bottom or top of a list such as an e-mail inbox list. The communications could appear in an order indicating
 25 their predicted relative degree of 'unwantedness'.); marking for investigation (e.g.

Forwarding to a third-party or regulatory agency for enforcement of rules governing unwanted communications, or forwarding to a third party for more detailed analysis.); indirect marking (e.g. Issuing a report listing suspected unwanted communications).

5 This approach can be applied to both sending and receiving a broad range of communications, including e-mail, instant messaging, XML messages (Extensible Markup Language), EDI messages (Electronic Data Interchange), facsimiles, telephone communications, commercial messages, postal mail, packaging material, broadcasts, digital images, etc.

10 Some types of communications include distinguishing identifiers which may be used as a signature for that type of communication. For example, unwanted communications often include particular words, such as “sale” or “free”, particular symbols, such as “\$”, repeating symbols, such as the repeating “E” in “PLEEEEEEASE”, particular colors or fonts, or particular phrases such as “limited time offer”. Each one of these words, symbols, or phrases may be stored in a database as a distinguishing
15 identifier.

Particular senders may often send particular types of communications. Some senders may tend to transmit unwanted communications, while friends and relatives transmit personal communications. The identity of the sender could be used as a distinguishing identifier for purposes of marking communications.

20 A database of these distinguishing identifiers is established. When a communication is received, a determination is made as to whether the communication includes one of these distinguishing identifiers. Communications that include one of the identifiers are marked and then forwarded to their intended recipients.

25 **Figure 1** depicts a pictorial representation of a distributed data processing system in which the present invention may be implemented. Distributed data processing system 100 is a network of computers in which the present invention may be implemented.

Distributed data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within distributed data processing system **100**. Network **102** may include permanent connections, such as wire or fiber optic cables, or temporary connections made through telephone connections. The communications network **102** also can include other public and/or private wide area networks, local area networks, wireless networks, data communication networks or connections, intranets, routers, satellite links, microwave links, cellular or telephone networks, radio links, fiber optic transmission lines, ISDN lines, T1 lines, DSL, etc. In some embodiments, a user device may be connected directly to a server **104** without departing from the scope of the present invention. Moreover, as used herein, communications include those enabled by wired or wireless technology.

In the depicted example, a server **104** is connected to network **102** along with storage unit **106**. In addition, clients **108**, **110**, and **112** also are connected to network **102**. These clients **108**, **110**, and **112** may be, for example, personal computers, portable computers, mobile or fixed user stations, workstations, network terminals or servers, cellular telephones, kiosks, dumb terminals, personal digital assistants, two-way pagers, smart phones, information appliances, or network computers. For purposes of this application, a network computer is any computer, coupled to a network, which receives a program or other application from another computer coupled to the network. In the depicted example, server **104** provides data, such as boot files, operating system images, and applications to clients **108-112**. Clients **108**, **110**, and **112** are clients to server **104**.

Distributed data processing system **100** may include additional servers, clients, and other devices not shown. In the depicted example, distributed data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major

nodes or host computers, consisting of thousands of commercial, government, educational and other computer systems that route data and messages. Of course, distributed data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area network (LAN), or a wide
 5 area network (WAN). **Figure 1** is intended as an example, and not as an architectural limitation for the present invention.

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance with the present invention. Server **200** may be a symmetric multiprocessor (SMP) system including a plurality of processors **202** and **204** connected
 10 to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212**
 15 provides an interface to PCI local bus **216**. A number of modems may be connected to PCI local bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to clients **108-112** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216**
 20 through add-in boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI
 local buses **226** and **228**, from which additional modems or network adapters may be supported. In this manner, server **200** allows connections to multiple network computers. A graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as
 25 depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM e-Server pSeries system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system or LINUX operating system.

Figure 3 is a block diagram illustrating a data processing system that may be implemented as a client in accordance with the present invention. Data processing system **300** employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus architectures such as Accelerated Graphics Port (AGP) and Industry Standard Architecture (ISA) may be used. Processor **302** and main memory **304** are connected to PCI local bus **306** through PCI bridge **308**. PCI bridge **308** also may include an integrated memory controller and cache memory for processor **302**. Additional connections to PCI local bus **306** may be made through direct component interconnection or through add-in boards.

In the depicted example, local area network (LAN) adapter **310**, SCSI host bus adapter **312**, and expansion bus interface **314** are connected to PCI local bus **306** by direct component connection. In contrast, audio adapter **316**, graphics adapter **318**, and audio/video adapter **319** are connected to PCI local bus **306** by add-in boards inserted into expansion slots. Expansion bus interface **314** provides a connection for a keyboard and mouse adapter **320**, modem **322**, and additional memory **324**. Small computer system interface (SCSI) host bus adapter **312** provides a connection for hard disk drive **326**, tape drive **328**, and CD-ROM drive **330**. Typical PCI local bus implementations will support

three or four PCI expansion slots or add-in connectors.

An operating system runs on processor 302 and is used to coordinate and provide control of various components within data processing system 300 in **Figure 3**. The operating system may be a commercially available operating system, such as Windows 2000, which is available from Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating system from Java programs or applications executing on data processing system 300. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk drive 326, and may be loaded into main memory 304 for execution by processor 302.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

Data processing system 300 may take various forms, such as a stand-alone computer or a networked computer. As a further example, data processing system 300 may be a personal digital assistant (PDA) device, which is configured with ROM and/or flash ROM in order to provide nonvolatile memory for storing operating system files and/or user-generated data. The depicted example in **Figure 3** and above-described examples are not meant to imply architectural limitations. For example, data processing system 300 also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system 300 also may be a kiosk or a Web appliance.

Figure 4 illustrates a high level flow chart which depicts storing distinguishing identifiers in a database in accordance with the present invention. The process starts as depicted by block **400** and thereafter passes to block **402** which illustrates establishing a database for storing distinguishing identifiers. The identifiers are used to identify particular types of communications. These types of communications include unwanted communications, personal communications, or any other type of communication. A communication will be considered to be a particular type of communication if it includes an identifier that is stored in the database of identifiers. For example, the database may include identifiers that identify unwanted communications. If a received communication includes an identifier that is stored in the database, the communication will be marked as unwanted.

An identifier may be any type of textual string, alphanumeric string, particular string of words, a particular sender, a particular number of intended recipients, a particular return address, a particular language, a particular Internet service provider source, a particular font color, a particular phrase, or any other identifier. The textual string may include repeating letters or symbols. For example, an unwanted communication may include multiple exclamation points, or repeating dollar signs. Other unwanted communications may include the phrase "click here to remove from mailing list". An identifier may also be graphical or audio. For example, an unwanted communication may contain a graphic or spoken words related to a competitor's computer or related to adult material. Methods for storing and comparing textual, graphical, and audio data are known to those skilled in the art.

Next, block **404** depicts storing identifiers in the database. The process then passes to block **406** which illustrates receiving an identifier to be stored in the database. Next, block **408** depicts a determination of whether or not the identifier is already stored in the database. If a determination is made that the identifier is already stored in the

database, the process passes to block **410** which illustrates incrementing a counter that is associated with the sender of the communication that included this identifier. A counter can be established for each sender of a communication that includes either an identifier already included in the database or an identifier determined from a communication that was deleted without opening. The counters can be used to identify a sender who often sends unwanted communications. The process then passes back to block **406**. Referring again to block **408**, if a determination is made that the identifier has not already been stored in the database, the process passes to block **412** which depicts storing the identifier. The process then passes to block **410**.

Figure 5 depicts a high level flow chart which illustrates marking particular types of communications in accordance with the present invention. The process described by **Figure 5** may be executed by a server computer system, a service bureau executing within a server computer system, a Web browser included within a recipient's computer system, or another routine being executed by a recipient's computer system. The present invention may be implemented as a service whereby customers register with the service. Registered customers then have their communications marked as described herein.

The process starts as depicted by block **500** and thereafter passes to block **502** which illustrates a computer system receiving a communication. The communication may be any type of communication such as electronic mail, instant messages, telephone calls, or any other type of communication.

Next, block **504** depicts a determination of whether or not the communication includes one of the identifies stored in the database. If a determination is made that the communication does include one of the identifiers, the process passes to block **506** which illustrates marking the communication and then forwarding it to its intended recipient.

Any method may be used for marking a communication. If the process of **Figure 5** is being executed within the recipient's computer system, the communication is forwarded

from the Web browser or routine to a service within the recipient's computer system that is used to receive communications. For example, the communication could be forwarded within the recipient's computer system from a Web browser to an e-mail routine. The process then passes to block **514**.

5 Alternatively, the communication could be deleted without forwarding it to the intended recipient.

Referring again to block **504**, if a determination is made that the communication does not include one of the identifiers stored in the database, the process passes to block **508** which depicts a determination of whether or not the communication was deleted
 10 without being opened. If a determination is made that the communication was not deleted before it was opened, the process passes back to block **502**. Referring again to block **508**, if a determination is made that the communication was deleted before it was opened, the process passes to block **510** which depicts a determination of whether or not an identifier should be retrieved from the communication and then stored in the database.
 15 If a determination is made that an identifier should not be retrieved from the communication and then stored in the database, the process passes back to block **502**.

Referring again to block **510**, if a determination is made that an identifier should be retrieved from the communication and then stored in the database, the process passes to block **512** which illustrates determining an identifier from the communication.
 20 Thereafter, block **514** depicts storing the identifier in the database. The process then passes back to block **502**.

The process described above could be modified to block all communications from particular senders. Thus, when a communication is received, if it is from a particular sender, the communication would be discarded before determining if it included an
 25 identifier.

Figure 6 depicts a high level flow chart that illustrates a recipient receiving marked communications in accordance with the present invention. The process starts as depicted by block **600** and thereafter passes to block **602** which illustrates a recipient computer system receiving a communication. This communication may be received from a server computer system, from a Web browser that is executing within the recipient's computer system, or from another service executing within the client computer system.

Next, block **604** depicts a determination of whether or not the communication has been marked. If a determination is made that the communication has not been marked, the process passes to block **606** which illustrates placing the communication in the recipient's mail box. The process then passes to block **610**. Referring again to block **604**, if a determination is made that the communication has been marked, the process passes to block **608** which depicts placing the communication in a special folder created to hold marked communications.

Next, block **610** illustrates a determination of whether or not the communication has been opened. If a determination is made that the communication has been opened, the process passes back to block **602**. Referring again to block **610**, if a determination is made that the communication has not been opened, the process passes to block **612** which depicts a determination of whether or not the communication has been deleted. If a determination is made that the communication has not been deleted, the process passes to block **602**. Referring again to block **612**, if a determination is made that the communication has been deleted, the process passes to block **614** which illustrates sending a message to the server computer system about the communication being deleted without being opened. Information is included about the communication's sender. The process passes to block **602**.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will

appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media
5 include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of coded formats that are decoded for actual use in a
10 particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to
15 best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.